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AUTHOR Cohen, Margaret W.
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ABSTRACT

Following deCharms' theory of personal causation and Harvey's conceptual systems approach to cognitive complexity, it was hypothesized that the manner in which teachers choose to promote motivating classroom climates is a function of the systems teachers use to substantiate their own beliefs. A focal concept was the degree to which students are invited to originate and participate in classroom activities. Thirty-nine teachers participated in the project that demonstrated that teachers' beliefs systems significantly affect the manner in which they interact with their students, the degree and types of influence students have, and the resultant climate created. (Author)

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Student Influence in the Classroom

Margaret W. Cohen

State University of New York at Albany

Department of Educational Psychology and Statistics

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The primary goal of this study was to answer the question, "What characteristics of teachers contribute to students' motivational experiences in the classroom?" A secondary goal was to replicate and extend the findings of Koenigs, Fiedler and deCharms (1977) which demonstrated that teachers of varying belief systems engage in different patterns of classroom interaction with their students. The rationale for the research is embedded within two theoretical frameworks: personal causation, posited by deCharms (1968) and conceptual systems theory, proposed initially by Harvey, Hunt and Schroder (1961). The objectives, then, contribute to an integration of two theoretical approaches for understanding classroom events. The guiding conceptual hypothesis was that teachers' belief systems affect the manner in which they interact with their students which, in turn, influences the students' experiences of motivation.

Theoretical Framework

Personal Causation

Personal causation is a motivational variable (deCharms, 1968) which describes the experiences persons have when they are initiating, in control of, and responsible for their own actions. The theory implies that "when a person feels he has personal causation, he feels that he has some control over his fate; he feels that he can originate at least some of his own behavior rather than have it entirely dictated from without" (Koenigs et al., 1977,p.100). When individuals experience themselves engaging in activities of their own choosing, they are considered Origins; that is, they feel personal causation, "the initiation by an individual of behavior intended to produce a change in the environment" (deCharms, 1968, p.6). In contrast, "a Pawn is a person who perceives his behavior as determined by external forces beyond his control" (pp.273-274).

Whether one acts as an Origin or as a Pawn is dependent on the amount of freedom allowed or structured imposed by the particular environment. Kuperman (Note 1) and deCharms, Dougherty and Wurtz (Note 2) manipulated experimental conditions in a manner that would reflect these situational extremes. Both studies confirmed that under Origin conditions, subjects felt more freedom, greater enjoyment of the task, and more motivation to continue than when they were in the Pawn situation.

Hypothesizing that training in personal causation should make school life more intrinsically motivating for teachers and students, deCharms (1972, 1976) initiated a longitudinal field study. During training sessions teachers were encouraged to understand and experience themselves as causal agents. The teachers, in turn, developed training units for classroom use to increase their students' motivation. The goal of these activities was to encourage students to assume responsibility for their own learning by helping them to interpret and feel in control of the events in which they participated. When compared to students who did not receive training, the students of trained teachers had fewer absences and tardies, greater standardized achievement gains, perceived their classrooms as more conducive to motivational experiences, and had higher scores on a measure of the Origin-Pawn variable developed by Plimpton (Note 3).

The consistency of these patterns of results prompted questions such as, what are the natural conditions that foster Origin-like activities and classroom environments that are motivating? What does personal causation theory predict about the nature of teacher - student interactions? Noting

the absence of student initiations as a critical variable in classroom observation systems and recognizing the importance of group members' participation in the leadership and socialization literature, Fiedler (1975) modeled an observation measure of classroom influence patterns after Jones and Thibaut's (1958) approach to understanding dyadic interactions.

In explaining interpersonal behavior Jones and Thibaut distinguish between two kinds of interactions. An assymetrically contingent interaction is one "in which the behavior of one actor is fully contingent on the behavior of another, but the other's behavior is independently determined..." (p.155). In reciprocally contingent interactions, "the behavior of one actor is contingent on the behavior of the other and vice versa" (p.157). Fiedler (1975) reasoned that assymetrically contingent interactions would characterize classrooms in which teachers expect their students to conform to teacher demands and discourage student initiations. Reciprocally contingent interactions would describe classrooms in which teachers stimulate and acknowledge student participation. Fiedler hypothesized that students' experiences of personal causation would be stronger in classrooms when teacher - pupil interactions were reciprocally contingent, rather than assymetrically contingent.

To measure the extent to which teachers engage their students in reciprocally contingent interactions, Fiedler developed the Hit-Steer Observation System. Using her terminology, a verbal statement intended to influence class activities offered by either the teacher or students is called a <u>hit</u>. If the students comply with the teacher's statement or

the teacher with the students', they have been steered. Refusal to comply with a hit is a no steer. If a response does not have a clearly scorable consequent, it is recorded as a conditional steer. Assuming that the teacher is the controlling influence in the classroom, a high proportion of pupil hits to total teacher and pupil hits indicates that teacher and students engage in a promotively interdependent relationship. Using deCharms' (1968) shorthand terms, shared influence connotes teachers and pupils interacting as Origins. Fiedler's results demonstrated that teacher - student interaction patterns are positively related to students' experiences of personal causation. In classrooms where the proportion of student influence attempts was high, mean classroom scores on the Origin Climate Questionnaire were also high. This questionnaire (Koenigs & Hess, Note 4) was designed to tap the degree to which pupils perceive that they are invited to originate behavior in the classroom. Fiedler reported that higher Origin Climate scores were also significantly related to student achievement "indicating that students learned more in classes where they felt they had more control over their behavior...." (p.742).

By demonstrating the reciprocal nature of teacher and student interactions, Fiedler has contributed a behavioral measure of personal causation. In its original form, however, the observation system assesses general influence attempts and does not discriminate between varieties of teacher and pupil hits. One intended outcome of the present study was to refine the observation measure to differentiate between those hits which contribute to the creation of classroom climates conducive to learning from those which interfere with the learning process. Validating the new subcategories by relating them to teachers' conceptual complexity was another goal.

Teacher Conceptual Systems

Harvey, Hunt and Schroder (1961) define a concept as "the medium through which the individual establishes and maintains ties with the surrounding world" (p. 11). Concepts delineate a "system of ordering" (p. 1) for the individual. Harvey's research has led to the identification of four belief systems each of which consists of

> a set of predispositions to perceive, feel toward and respond to ego-involving stimuli and events in a consistent way. As such, it operates as a kind of psychological filter which renders the individual selective in his discriminations, in what he attends to, in what generates positive and negative affect within him and in the ways he responds toward certain bands or family of stimuli. Especially relevant for education, the person's belief systems additionally influence the kinds of cues or guideposts on which one relies and utilizes in making his decisions. (Harvey, Note 5, pp. 2-3)

The characteristics of a teacher representative of each of the four belief systems are summarized below.

System 1. System 1 functioning shows a "simpler cognitive structure in regard to domains of high involvement" when compared to other systems (Harvey, Note 5, p. 5). Such teachers rely upon their role as authority in the classroom to maintain order and establish rules. Their judgments of pupil behavior are extreme and evaluative. They are the

most punitive and rigid of all the systems. Because such persons have a low tolerance for ambiguity and uncertainty, as teachers they prevent conflicting inputs from entering their own fields and consequently, that of their pupils. This absolutism is base on "a priority, the epistemic assumption that men and events are controlled by some supra-personal force" (Harvey, Note 6, p.11).

System 2. This functioning is characterized by an absolutism as strong as that of System 1, but is distinct because its representatives tend "to distrust, reject, and weigh negatively many of the cues [on the assessment measure], expecially those relating to established custom and authority, which are used as positive guidelines and signs of validity by persons of System 1" (Harvey, Note 5, p. 8). This person is the cynic or nihilist. Harvey noted that the probability of a teacher being a representative of this system is rare (Note 5, Note 6).

System 3. These teachers are less evaluative and more abstract than either the System 1 or 2 representatives. They are most concerned with interpersonal harmony and therefore maintaining a comfortable and happy classroom. Their beliefs are validated by peer norms and classroom rules are decided by student consensus.

System 4. "This, the most abstract of the four systems, is characterized by high task orientation, information seeking, low dogmatism, creativity (in the sense of offering solutions to problems that are high in both novelty and appropriateness), openness to inputs from diverse sources and a high independence of judgment" (Harvey, Note 5, p. 8). In a study of parent-child relations Harvey and Felknor (1970) found that the System 4 repre-

sentative is the recipient of a diversity of experiences as a child. It can be inferred that these teachers will present a variety of activities to their pupils that will encourage novelty and exploration. This orientation rejects "both a priority and consensus as the ultimate criteria of validity, [but does not] insist on an exclusively idiosyncratic or solipistic position. [Representatives] are pluralistic in their conceptions of causality..." (Harvey, Note 6, p. 15).

A series of studies conducted by Harvey and his colleagues (1966, 1968; Note 7) demonstrated the relationship between teachers' conceptual complexity, classroom environment, and student behaviors and performance. Concrete, inflexible teachers were found to be more dictatorial and less task oriented than teachers who were abstract, flexible and perceptive to the needs of their students. Students of the abstract teachers were more involved, active, higher in achievement, and less concrete than students taught by teachers who were less conceptually complex.

More recently, Koenigs (Note 8) posited that teachers' conceptual complexity is associated with students' motivational experiences and found that Origin Climate Questionnaire (Note 4) scores were a positive, linear function of teachers' belief systems. Since Fiedler's (1975) data was obtained from a subgroup of Koenigs' sample, the data from both projects were analyzed together and are reported in Koenigs, Fiedler, and deCharms (1977). The results that they present support a conceptual scheme that links the constructs of teacher belief systems, teacher - student influence patterns, classroom climate and student achievement. Briefly, "teachers whose verbal-utterances concerning their beliefs show more openness,

complexity, interpersonal sensitivity, are more apt to accept and hence encourage influence attempts from pupils. Moreover, the pupils are aware of this and are fully capable of reporting it" (p. 109). Analyses using achievement data, though only available for a subgroup of these classrooms, showed "that in classrooms where pupils have more influence achievement is greater" (p. 110). Since the Harvey studies (1966, 1968; Note 7) used multidimensional rating scales to study the nature of teacher - student relationships, the results of Koenigs et al. are noteworthy because they substantiate the supposition that observable teacher and student behaviors are related to teachers' beliefs and classroom environments.

Revision of the Observation System

If teachers of varying belief systems allow their students different degrees of influence during classroom interaction, do the nature of the interactions also vary? Influence attempts made by System 1 teachers who are concerned with maintaining structure and order in their classrooms may be functionally different from those made by System 4 teachers who are more concerned with encouraging novelty and exploration. The quality of student influence attempts, in turn, may vary based on the norms teachers set for their classrooms. For example, in response to a request from the teacher, a student theoretically has several choices. He may simply respond, refuse to respond, or he may initiate his own request. However, the action he chooses may already be determined by the content of the teacher's directive. The teacher may have preempted student choice by imposing structure or invited pupil action by stimulating alternatives.

In response to these questions the Hit-Steer Observation System was refined to include finer discriminations of the teacher and pupil influence categories. Two types of teacher hits were identified[1]: an imposing teacher hit, which imposes certain behaviors or standards of performance on the student or requires a specific response; and an inviting teacher hit, which helps the student toward hypothesizing, self-expression, or determination of a standard of performance. Three kinds of pupil hits were defined: expressing, an expression of opinion or feeling about the lesson or task; attending, a request for specific information or task evaluation or an offer of help or advice; and noise, a request for permission or previously given information, or attention-getting behavior.

An example of an imposing teacher hit would be, "Do you think the bread became moldy because it was exposed to oxygen?", but "Do you have any ideas why the bread grew mold?" would be scored as an inviting teacher hit. Imposing teacher hits limit the range of responses open to the student so that a pupil steer of "yes" or "no" would likely occur, as in this example. A student's response to the inviting question would be scored as an expressing pupil hit if s/he said. "Could it be because it was exposed to air and water?" An attending pupil hit would be scored if a student asked, "What color is the mold?"; and a noise pupil hit, if s/he asked, "What was the question?" or "What page are you on?"

Hypotheses

With the inclusion of the subcategories into Fiedler's (1975) observation system, the replication of the Koenigs et al. (1977) study was initiated. In general it was hypothesized that the relationships between

teachers' belief systems, classroom interaction patterns, and classroom climate would be sustained. To add clarity to these relationships specific hypotheses were formulated for each of the teacher and pupil hit subcategories. It was expected that teachers with more complex belief systems would stimulate pupil influence attempts by employing inviting teacher hits which students would acknowledge by offering expressing and attending pupil hits. Less complex teachers , on the other hand, were expected to use more imposing teacher hits. Student influence attempts in those classrooms would then be limited to noise pupil hits as students recognized their teachers implicit concern with maintaining certain procedures. As a consequence of inviting pupil influence, it was hypothesized that higher belief system teachers would create classroom climates more conducive to students' experiences of personal causation than would less abstract and more absolutistic teachers.

Method

Participants

Teachers and students in 39 sixth grade classrooms from four school districts in the metropolitan area of a large midwestern city agreed to participate in the study.

Measures and Procedures

Belief Systems. Teachers' conceptual systems were measured by the "This I Believe" Test developed by Harvey (1964, 1965). With this instrument subjects respond for two minutes to each of 12 sentences such as "This I believe about teaching" or "This I believe about success". Respondents are instructed "to write your opinions or beliefs about several topics. Please

write at least two (2) sentences about each topic....Be sure to write what you genuinely believe." In addition to teaching and success, the teachers wrote belief statements to ten other referents: education, discipline, religion, friendship, people, individualized instruction, foreign aid, insubordination, politicians and the American way of life.

The completed protocols were coded by two trained raters[2] who classified each into one of the four belief systems or into an admixture of two systems. The protocols were also rated on seven dimensions identified by Harvey: openness, candor, evaluativeness, externality, cynicism, optimism and simplicity-complexity. The inter-scorer reliability coefficient for this sample was 89%.

For purposes of analyses the distribution of belief system scores was divided into four groups representing increasing degrees of conceptual complexity. Group A consisted of eight teachers whose primary belief system scores were System 1 and one teacher who scored System 2. Group B consisted of 13 teachers whose belief system scores had elements of both System 1 and System 3. Eleven teachers whose primary belief system score was System 3 were included in Group C. Group D consisted of five teachers whose belief system scores included admixtures of System 4. One teacher chose not to complete the "This I Believe" Test which reduced the sample size to 38 teachers for the analyses involving belief system data.

Teacher-Student Interaction. Observations of approximately an hour's duration were completed in the 39 classrooms by trained observers[3] using the revised Hit-Steer Observation System. Inter-observer reliability was 87.8%. For 32 of the 39 observations completed the teachers complied with a request to schedule observations during a social studies class.

Classroom observation scores were standardized for 20 minute time blocks to correct for differences in total observation time. A ratio of pupil hits to total teacher and pupil hits was computed for each classroom as an indicant of the amount of influence students were permitted to share. Since each new subcategory is correlated with its defining major category of pupil or teacher hits, a correction was employed to remove the natural effects of, for example, classrooms with a high frequency of pupil hits obviously having a greater chance of having more expressing, attending, or noise pupil hits than classrooms with a low frequency of pupil hits. Standardized T score conversions were calculated for each subcategory based on its estimated value which was predicted from its major category.

Classroom Climate. Following each classroom observation the teachers were given standardized written instructions for administering the Origin Climate Questionnaire (Koenigs & Hess, Note 4) to their students. The instructions emphasized that the students be informed that their responses were confidential. Each teacher was given an envelope in which to collect the completed questionnaires and asked to seal it in the presence of the children.

The questionnaire consists of 24 Likert type items which measure the extent to which students perceive that their teacher (1) allows them control within the classroom, (2) encourages goal setting and (3) instrumental activity to (4) realistic goals, encourages them to assume (5) personal responsibility for their actions and (6) nurtures a sense of self confidence. Examples are "The teacher gets upset when we try new things" and "The teacher tells us how to use our extra time". The complete instrument with scoring instructions and validation data can be found in deCharms (1976).

Twelve protocols (six boys and six girls) were randomly selected to be scored from each classroom and serve as the mean score received by each teacher. The maximum score of the questionnaire is 120 points.

Results

Teacher Belief Systems and Classroom Interaction

Using the four belief system groups as the independent variable and the ratio of pupil hits to total teacher and pupil hits as the dependent variable, a one-way analysis of variance was performed. Since proportions are not normally distributed, an arc sin transformation was performed on the ratio score for purposes of statistical analysis (Winer, 1962). Table 1 includes the mean percent of student influence for each belief system group and indicates that students share increasingly more classroom influence with higher belief system teachers. The results of the analysis approached statistical significance ($F(3,34) = 2.70$, $p<.06$) and lend support to the Koenigs et al. (1977) demonstration of the same relationship.

The analyses using the teacher and pupil hit subcategories provide insight into how teachers' belief systems affect the classroom experiences their students have. Correlations with the belief system dimensions provide validity data for the new subcategories. The correlations between teachers' openness, complexity, and externality and the ratio of pupil hits to total hits in their classrooms are +.43,+.43, and -.42, respectively. Teachers who score high on openness and complexity and low on externality are more likely to encourage their students to share in the influence process.

The evaluativeness dimension is negatively related to teacher inviting hits ($r=-.40$). Thus, evaluativeness is associated with imposing teacher

hits (inviting and imposing are mutually exclusive). Teachers who are open and complex are influenced by their students with expressions of hypotheses and opinions (r= +.48, +.38, respectively). Pupil influence attempts scored noise occur in classrooms where the teacher is low on openness, candor, and complexity (r= -.37, -.41, -.34). Relationships with the subcategory of attending were negligible.

Analyses of variance with the belief system grouping as the independent variable were completed for each of the subcategories. The standardized T scores for each category were entered as dependent variables. Significant differences between belief system groups were demonstrated for the pupil expressing subcategory indicating that teachers with higher belief systems encourage such contributions from their students more often than teachers with less abstract belief systems ($F(3,34) = 3.47$, $p<.05$). Table 1 also includes data, expressed in terms of percentages, for each of the subcategories. For example, 3% of the pupil hits in the lowest belief system group were expressing pupil hits, while 15% of the pupil hits initiated in the classrooms of teachers in the highest group were scored expressing.

Teacher Belief Systems and Origin Climate

Table 2 presents the mean scores on the Origin Climate Questionnaire for each teacher belief system group. An analysis of variance with Origin Climate scores as the dependent variable, revealed significant differences between the groups ($F(3,34) = 4.01$, $p<.02$), replicating the results reported by Koenigs et al. (1977).

Classroom Interaction and Origin Climate

To test the relationship between the degree of student influence and the classroom climate, the distribution of the ratio of pupil hits to total classroom hits was divided into three groups of 13 classrooms each representing increasing amounts of student influence. Table 3 presents the mean Origin Climate scores for classrooms where the proportion of student influence was low, moderate, or high. The analysis of variance was highly significant ($F(2,36) = 6.27$, $p < .005$), replicating the relationship reported by Koenigs et al. (1977).

Correlational analyses indicated that the expressing pupil hit subcategory was positively related to the mean Origin Climate scores ($r = +.37$), while the noise pupil hit subcategory was negatively related ($r = -.32$). Analyses of variance were performed with each subcategory's distribution divided into tertiles to serve as the independent variable. Mean Origin Climate scores serve as the dependent variable in each analysis.

When the grouping variable was based on the distribution of expressing pupil hits, analysis of variance indicated that Origin Climate scores were higher in classes where students influence their teachers with greater amounts of expressing hits. Table 4 presents the mean climate scores. The relationship is highly significant ($F(2,36) = 5.92$, $p < .006$).

The relationship between noise pupil hits and Origin Climate scores was in the expected direction as can be seen in Table 5, but the analysis did not reveal statistical significance. The results using the distributions of the subcategories of inviting, imposing, and attending were negligible and therefore, are not reported here.

Discussion

With the replication of Koenigs, Fiedler and deCharms' (1977) pattern of results the compatibility of personal causation theory (deCharms, 1968,1976) with the conceptual systems approach to complexity (Harvey, 1964) has been confirmed. The systems teachers rely on to substantiate their beliefs clearly affect the manner in which they interact with their students and influence the experiences students have in the classroom situation.

The refinements of the teacher and student influence subcategories were proposed to determine whether and how the nature of teacher and student hits varied given the teacher's belief system. Their inclusion met with some degree of success. The correlational analyses that examined the relationships between the dimensions of the "This I Believe" Test and the new subcategories provide construct validation for the teacher hit subcategories and the expressing and noise pupil hit subcategories. Conceptually, those categories are associated with the teacher characteristics that would be expected. The analyses of variance, however, demonstrated significant differences between teachers' belief systems only for the expressing pupil hits. The relationships of the subcategory of noise with belief systems and Origin climate are promising enough to warrant pursuit.

The lack of statistical strength for the other subcategories could be explained in several ways. A lack of consonance within the theoretical framework can be discounted as an explanation since, by providing a replication of Koenigs et al., the relationship between personal causation and belief systems is supported. Instead, a careful examination of the

operational definitions of the subcategories seems more appropriate. As defined, attending pupil hits were scored when students initiated "on task" influence attempts. These included requests for specific information as well as requests for the teacher to sanction or approve the students' work or behavior. According to personal causation theory Origins score higher on self confidence than do Pawns, who would be more likely to seek external approval for their actions. Requests for sanctioning, then, may indicate students' insecurity or rigid adherence to teachers' rules. Although such requests are not "off task", they do not contribute to the constructive flow of a lesson as attending hits should. Whether another pupil hit subcategory that could extract requests for immediate approval would have a higher frequency of occurrence in the classrooms of System 1 teachers compared to higher belief system teachers is an empirical question.

The teacher hit subcategories, inviting and imposing, were in conceptual accord with personal causation theory, but operationally were not discrete enough to differentiate classroom interaction patterns. The fact that the two subcategories are mutually exclusive is problematic. Inviting occurs infrequently in all classrooms. Consequently, imposing was scored for all other teacher hits, rather than discriminating between them. One way to identify varieties of teacher hits of an impositional nature would be to obtain observational data from two classrooms whose teachers employ teaching styles that are clearly different.

Returning to the objectives of the study, it appears that the effort to refine the Hit-Steer Observation System is moving in a promising direction, but is not entirely conclusive. More progress has been made with the pupil hit subcategories than with the teacher hit subcategories. In fact, one study that has been reported elsewhere (Cohen, Note 9) provides evidence that the pupil hit subcategories can discriminate between teachers who participated in an in-service personal causation training program and those who did not. The goal of contributing to the integration of two theoretical approaches for understanding the classroom is in sight. The theories proposed by deCharms and Harvey have been logically and consistently put to empirical test over a 15 year period. Both approaches have moved from the theoretical plane to the field based study of the classroom. Addressed together, they pave a route capable of bringing researchers closer to an understanding of the motivational dynamics that occur between students and their teachers.

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Footnotes

[1] I acknowledge the influence of Joyce and Harootunian's manual (1967) for coding teachers' verbal behaviors in developing these sub-categories. Their categories of "development of procedures" and "handling of information" were conceptually separated into communications that (1) impose pupil compliance and (2) encourage pupil action.

[2] S.S. Koenigs and D.J. Shea coded the "This I Believe" Tests.

[3] J.E. Porter served as the second observer.

Table 1

Observation Data Means for Four Belief System Groups

	Total Classroom Hits	Teacher Hits		Pupil Hits		
Belief System Group	% Student Influence	% Invite	% Impose	% Express	% Attend	% No
A (n = 9)	25	9	91	3	75	2
B (n = 13)	28	9	91	14	71	1
C (n = 11)	35	14	86	24	70	
D (n = 5)	39	13	87	15	79	

Table 2

Classroom Climate Scores for

Four Teacher Belief System Groups

Belief System Group	Mean Score on Origin Climate Questionnaire
A (n = 9)	82.22
B (n = 13)	78.92
C (n = 11)	87.82
D (n = 5)	87.40

Note. Maximum score = 120.

Table 3

Classroom Climate Scores for

Three Student Influence Groups

Percent of Student Influence	Mean Score on Origin Climate Questionnaire
Low (8% - 22%)	80.92
Medium (23% - 37%)	81.00
High (38% - 63%)	89.38

Note. Maximum score = 120.
Each group n = 13.

Table 4

Classroom Climate Scores for

Three Expressing Pupil Hit Groups

Amount of Expressing Pupil Hits	Mean Score on Origin Climate Questionnaire
Low (n = 13)	79.69
Medium (n = 13)	82.62
High (n = 13)	89.00

Note. Maximum score = 120.

Table 5

Classroom Climate Scores for

Three Noise Pupil Hit Groups

Amount of Noise Pupil Hits	Mean Score on Origin Climate Questionnaire
High (n = 13)	81.08
Medium (n = 13)	85.25
Low (n = 13)	85.00

Note. Maximum score = 120.